

**What is claimed:**

1. A playback system, comprising:

a depacketizer circuit coupled to receive packets of audio data from a storage  
5 device, the depacketizer circuit extracting data and outputting one or more data  
streams; and

at least one decoder core receiving the one or more data streams, the decoder  
decoding audio data according to a lossless unpacking scheme, wherein the  
depacketizer circuit and the at least one decoder core are coupled to provide data  
10 directly from the depacketizer circuit to the at least one decoder core without  
buffering.

2. The system of claim 1, further comprising a matrixing circuit for generating  
at least partially correlated audio output from three or more signal streams from  
15 the at least one decoder core.

3. The system of claim 1, wherein the at least one decoder core is two decoder  
cores, one decoder core receiving from the depacketizer circuit a substream  
comprising at least one audio channel, a second decoder core receiving from the  
20 depacketizer circuit a substream comprising up to four audio channels.

4. The system of claim 3, wherein the storage device is a DVD-Audio disk.

5. The system of claim 3, wherein the storage device is an optical storage disk.

6. The system of claim 3, wherein the storage device comprises a  
communications link between a data store and the depacketizer circuit.

7. The system of claim 1, wherein the at least one decoder core performs MLP  
30 decoding on data read from a DVD.

8. A playback system, comprising:

a depacketizer provided to receive packets of audio data from a storage device, the depacketizer extracting data and outputting one or more data streams;  
5 and

at least one decoder core receiving the one or more data streams, the decoder decoding audio data, wherein the depacketizer and the at least one decoder core are defined within a digital signal processor and provide data directly from the depacketizer to the at least one decoder core within the digital signal processor.

10 9. The system of claim 8, further comprising a matrixing circuit for generating at least partially correlated audio output from three or more signal streams from the at least one decoder core.

15 10. The system of claim 9, wherein the matrixing circuit is implemented in the digital signal processor.

20 11. The system of claim 9, further comprising a matrixing circuit for generating multichannel audio data, the matrixing circuit implemented within the digital signal processor.

12. The system of claim 11, wherein the at least one decoder core performs MLP decoding.

25 13. The system of claim 8, wherein the at least one decoder core comprises first and second decoder cores, the depacketizer providing a substream 0 to the first decoder core and providing a substream 1 to the second decoder core.

14. The system of claim 13, further comprising a matrixing circuit for generating multichannel audio data, the matrixing circuit implemented within the digital signal processor.

15. The system of claim 8, wherein data passes between the depacketizer and the at least one decoder core at 14.75 Mb/sec or higher.

16. An MLP encoding system, comprising:

a matrix circuit receiving a plurality of audio signal channels;

a first and second encoder core receiving data from the matrix circuit, the first and second encoders implementing MLP encoding on data output by the matrix circuit;

a packetizer receiving first and second data substreams from the first and second encoders, respectively, and formatting audio data into packets for storage on a storage medium, wherein the packetizer circuit and the first and second encoder cores are coupled to provide data directly from the first and second encoder cores directly without buffering.

17. The system of claim 16, wherein data passes between the first and second encoder and the packetizer at 14.75 Mb/sec or higher.